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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,931	03/01/2004	Takemori Takayama	04005/LH	3234
1933	7590	12/08/2005	EXAMINER	
FRISHAUF, HOLTZ, GOODMAN & CHICK, PC 767 THIRD AVENUE 25TH FLOOR NEW YORK, NY 10017-2023			YEE, DEBORAH	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/790,931

Applicant(s)

TAKAYAMA ET AL.

Examiner

Deborah Yee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 17-20 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17-20 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3-1-04; 7-28-04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: IDS 9-26-05.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I , claims 1-15, 17-20 and 22 in the reply filed on 9-26-05 is acknowledged.

### ***Information Disclosure Statement***

1. The information disclosure statement filed 7-28-04 and 3-01-04 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.
2. Japanese 2003-328078 and Heat Treatment of Steel publication require an English explanation of relevance. Komine et al publication requires the date published.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1 to 15, 17 to 20 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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5. Claim 1 recites "0.25 to 0.8% C solid dissolving" which is indefinite because it is uncertain whether C range is based on the total C content of the alloy or the total C content found in the surface layer.

6. Claims 2 and 17, each recite Cr concentration of cementite is adjusted to 2.5 to 10% which is indefinite because it is uncertain whether Cr range is based on the total Cr content of the alloy or the surface layer. Clear language such as ---2.5 to 10% of the total chromium content of the steel material--- is recommended. Note dependent claims recite a Cr range of 0.3 to 1.5%Cr. Also claims are indefinite because cementite is a carbide ( $\text{Fe}_3\text{C}$ ) and does not contain Cr.

7. In Claims 2 to 5, there is no antecedent basis for "quench hardened layer". For clarity, it is recommended in parent claim 1, line 6, to use language such as --which has a quenched hardened rolling contact surface layer---. Also claim 6, line 6, "fined" should be ---refined--- or ---reduced---.

8. Claim 9 recites "...surface layer containing 0.5 to 1.5 wt% C--- which is indefinite because it is uncertain whether 0.5 to 1.5% C is based on the total carbon content of the alloy or the total carbon content present in the surface layer. If it is the latter, then it is recommended to use language such as ---0.5 to 1.5 wt% C based on the total C content in the surface layer--. Also claim 9 recites "...0.05 to 0.2 wt% one or more alloy elements selected from the group..." which is indefinite because it is uncertain whether wt% is for the total sum of elements or for each element.

9. Claim 10 recites "gear module M" but fails to define M and how it is measured or calculated.

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10. The term “incrassating” recited by claims 17 to 19 is unclear. According to the Webster dictionary its definition is “to make thicker”. This term does not clearly define the invention since present invention does not want to thicken Cr but instead increase its concentration.

11. Claim 19 recites “...cooling to a temperature equal to or lower than the A1 temperature and then to a temperature equal to or higher than the A1 temperature...” This is confusing because cooling is first performed at a Temperature at no more than A1 and therefore it cannot be further cooled from a higher temperature of more than A1. Perhaps applicant needs to incorporate a reheating step.

12. Also to add clarity to claim 19, it is recommended to recite the first heating treatment step before the spherodizing treatment.

13. Claim 20 is indefinite because it recites a further preheating treatment step at 300C to A1 before induction hardening yet parent claim 18 already recites a second heat treatment step of 300C to A1. If the preheating treatment step is the same as the Cr incrassating treatment step recited in claim 18, then it is recommended to change preamble of claim 20 by reciting “The method of producing a rolling element according to claim 18, wherein the Cr incrassating treatment step is the second heat treatment comprising heating at a range of 300C to the A1 temperature in the two phase (cementite +ferrite ) region.---.

14. Claim 22 , the phrase “such as” is indefinite and needs to be omitted.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1, 3, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Monma et al (US Patent 3,663,314).
16. Monma discloses specific bearing steel examples 14 to 19 in Table IV in columns 3 – 4 which meet the composition recited by claim 1, and has a quench-hardened surface layer tempered at low temperature whereby surface layer contains cementite (designated as C percent in Table IV) within the vol% range of 2 to 18% dispersed in a martensite parent phase and solid-dissolving carbon (designated D in Table IV) within the range of 0.25 to 0.8%.
17. Even though the prior art does not teach quenched hardened layer containing 0.1 to 1.5 microns recited by claim 3, such property would be expected since the compositional limitations are met, and also Monma on lines 47 to 56 of column 5 teaches that a fine carbide particle size is obtained in order to improve fatigue life and compressive breaking strength.
18. Moreover, Monma teaches an induction hardened martensitic bearing steel which would include the rolling element in addition to its rolling contact surface, and hence would meet claim 6. Also “prior austenite grains” is a past rather than a present property and therefore not a patentable consideration.
19. Monma discloses specific bearing steel examples 26 to 32 in Table VII of column 7 containing Si and hence meet claim 7.

### ***Double Patenting***

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 1 to 15, 17 to 20 and 22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 to 12, 20 to 23, and 25 to 27 of copending Application No. 10/790959. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both recite a rolling element having a composition with essentially the same constituents in wt% that are overlapping, and has a martensitic microstructure containing soluble carbon, cementite, and Cr in the cementite, and/or compounds (nitrides, carbides and carbonitrides) in ranges that are encompassing or overlapping. Moreover they both recite the method of producing a rolling element or gear having

substantially the same steps at temperature and cooling and/ or heating ranges that are overlapping. Note that the overlap in range limitations establishes a prima facie case of obviousness since it would be well within the skill of the artisan to select the pending claimed ranges over the claims of application '959 since application '959 has the same utility and properties.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. The unapplied art has been cited to further depict the state of the art in roller material.

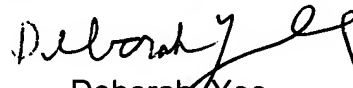
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on Monday-Friday from 6:00 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Deborah Yee  
Primary Examiner  
Art Unit 1742

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